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Logistics. Transportation and warehouse in supply chain

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<p>Logistics has a major influence on people life. Thesis work has been done to show solutions for the company in reduction costs and became more profitable. Warehouse and transportation management has been shown from many sides to help managers organize and implement management system in a way that suits company needs. Information technologies in logistics management has been described to fit company requirements.</p>		

Key words Information technologies, logistics , supply chain, storage, transportation, transport, warehouse,
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1 INTRODUCTION

Transportation and warehouse subject has been chosen for thesis work due to fact that logistics acquire more and more attention from specialist as far it has a lot of potential of saving money, time and effort. Moreover, comparing the company's logistics network with the circulatory system of the body. The main function of the circulatory system - delivered to the organs and tissues of the nutrients necessary for the life of the body, at the same time bringing them from carbon dioxide and waste products. And with the logistics network: timely replenishment of raw materials, creation and storage of reserves, quality control, supply of finished products to customers and ensuring reverse flows - all necessary for normal functioning of modern business and the successful solution of the tasks before it. In addition, as in the circulatory system, logistics can also happen to malfunction of individual objects of transport and storage infrastructure, created "bottlenecks", formed excess inventory and so on. In identifying these problems, their elimination and prevention of occurrence in the future and focused knowledge mind and strategic analysts in logistics. Their main task - to optimize the logistics system that takes into account all the main aspects of the company and enabling it to achieve long-term development goals. These professionals, as in the popular American TV series "Dr. House", based on the knowledge and professional experience, "diagnosed" corporate logistics system, select and apply the most effective methods of "treatment" of the problems detected. The main idea of thesis work is to describe in a proper and understandable way the main problems of logistics and storage, and solutions for solving them, make improvement in them. The logistics problem analyzing and information in the thesis has been absorbed on a basis of German company Ravenol, as well as has been done suggestions how to improve and why is better to choose one option over other on.

Thesis covering the most common problems of the logistics, as transportation, and way is better to use outsourcing instead of having own department. Warehouse, and solution that will accelerate all activities, make them automated for timesaving. The

plan of implementation has been avoided to be made. Thesis is mainly considered to be used as handbook for managers in Ravenol Company to understand whole picture in logistics and infrastructure of Germany and show how does function of the logistics are related to the company profit.

Ravenol is widely known company; brand name is Ravensberger Schmierstoffvertrieb GmbH, which has started operation in 1946 in the small town of Werther in Westphalia running by Hans Triebel. Now, many businesses from the automotive, engineering, steel and construction sectors, as well as mining, agriculture and transport companies count on on RAVENOL-branded oils and lubricants. Ravenol is offered his products in more than 80 counties to both commercial enterprises and motorists.

2 WHAT IS LOGISTICS

Logistics - a relatively new and young field of economics and human activity. Logistics covers activities such as information exchange, transport service, inventory management, warehousing, cargo handling and packaging. Every day logistics enterprise is considered as a complex process aimed at reducing overall costs. In terms of production growth, which led to a sharp increase in costs, entrepreneurs stopped on finding means to reduce the cost of the circulation. At the heart of successful logistics are the use of new information technologies and new approaches of transportation and warehousing activities. Many entrepreneurs are seeing the competitive advantages of new logistics systems and ways to implement them. (Bazhin, 2003)

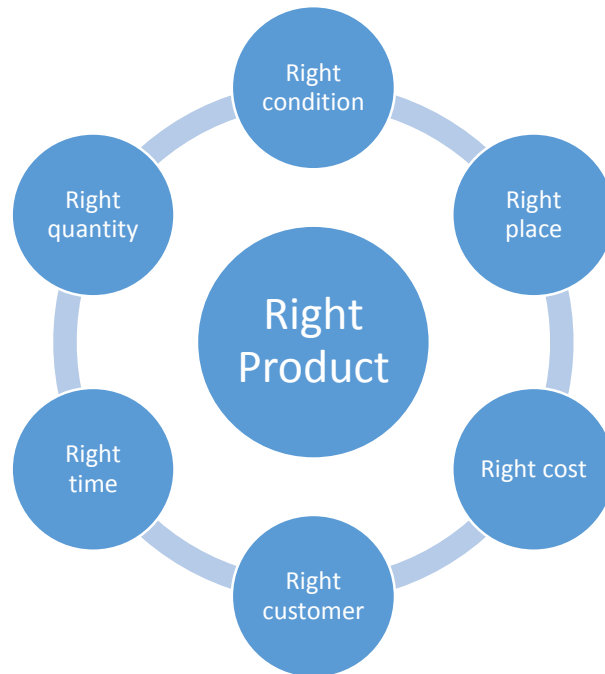
At present, the logistics specialist is observed as a person responsible for the delivery and storage of goods. In fact, the real expert should organize, control and be able to optimize the processes related to the delivery of goods (transport, customs procedures). The specialist must develop supply chain of raw materials, production planning, as well as issues of transportation and marketing of finished products. Logistic should see all possible, convenient and cost-effective way of delivery, production, storage and sale of goods. Basic logistics problem is optimization of logistic processes and systems. If we consider the impact of logistics on the development of market relations, the logistics requirements to monitoring and evaluation material flow, organization and management since its manufacturing to industrial consumption adopts communication between providers and recipients of products. Organizing and analyzing material flow along its entire length, they are concerned with improving the set of indicators throughout its duration; consider them not only on its input or on output of material flow, but also the corresponding figures for output and input of the partner. (Bazhin, 2003)

Methods of logistics is a reliable tool for improving the competitiveness of the commodity markets. Logistic management controls tools are seeking additional sources

to improve the budgetary framework. Using logistic approach at the level of government should contribute to the development of inter-sectorial linkages industrial, transport and trade. (Bazhin, 2003)

Logistics management techniques are being developed in the field of inter-state relations. Therefore, they can be taken into account and is widely used in the system of foreign economic relations with other countries in the formation of transnational financial and industrial groups. Currently, logistics is considered, as the direction of economic activity is to manage the material flow in the areas of production and circulation, as well as interdisciplinary research field directly related to the search for new opportunities to improve the efficiency of material flow. (Bazhin, 2003)

The main objective of logistics is defined as the right products in the right place at the right time at the right cost and in the right condition (See Graph 1 for examples of these). Logistics primarily includes the organization and implementation of goods movement in circulation. By logistic activities legitimately includes the following features: the formation of economic relations; determining the need for transportation of goods, their volumes and destinations, consistency and movement of products through the storage site; coordination of operational supply chain management and transportation; the formation and regulation of product inventories; development, deployment and organization of storage facilities; perform operations immediately preceding and trailing carriage of goods. (Bazhin, 2003)



Graph 1. The 7 R's of Logistics

Specified function has the following features. First, they represent a set of interrelated functions for the formation, organization, management and implementation of material flow in the process of commodity circulation. Secondly, the carriers of these features are in one way or another involved in this process: supply, sales, and transport services enterprises, associations, business associations, corporations and inter-regional and regional commercial and trade intermediary organizations and enterprises. In addition, the coordinating role in the organization of goods movement can exercise state structures that control the transport, trade, material and energy resources. Third, the criterion of effective implementation of these functions is the minimum unit total cost of moving goods, since each of the elements of these costs belongs to a significant proportion of their total. (Bazhin, 2003)

The urgency of the functions of logistics management merchandise has multiplied in the transition to a market economy. This is due to several reasons, an increase in dynamic relations between enterprises and organizations related sectors, including

industrial infrastructure. At the present stage increased opportunities for radical improvement in the interaction of enterprises with commercial and intermediary structures in the field of the means of production and transport organizations through increased economic freedom and initiative. (Bazhin, 2003)

Created new conditions for the development of their interaction in connection with the formation of multiple new organizational structures: business associations, consortia, alliances, including cross-sectoral nature. As part of these groups, such as regional associations, commercial and brokerage and transportation companies can solve most operational issues constantly; arise in the process of planning, organization and implementation of traffic. Moreover, the adoption of the necessary measures are not already requires coordination with the departmental authorities. However, with the development of direct economic relations, the role of control material flow at the level of government arise. (Bazhin, 2003)

In today's market, the company should focus not on their own interests and the interests of consumers. This commitment should be reflected in the maximum satisfaction of consumer needs. The combination of a decent standard of product quality and consumer properties of the other means for the consumer satisfaction of his needs. Nevertheless, the important factor is the cost of which depends on the level of the cost of production and sales. Reducing these costs is only possible with the use of different methods of logistics directly, to the whole cycle of movement of goods. (Benson, Whitehead, 1990)

Logistics activities are integrated in nature and extends from the moment of the need for a product or service and the time to meet this need. Logistics - is a joint venture enterprise to consolidate and control the processes aimed at achieving the objectives - making profit and customer satisfaction. All functions and operations should be planned, managed and coordinated as a whole. All processes in the framework of the individual functions are coordinated with each other and create thus reserves to reduce overall costs. The basis of the work consists of different logistics areas:

procurement of raw material procurement, production, marketing, transportation, information technology, as well as various control systems - inventory, product quality planning. (Benson, Whitehead, 1990)

Success in business depends not only on the company's performance, but also by its partners - suppliers, dealers, distributors, transporters. The need to link the different tasks, functions and processes requires an inclusive, comprehensive and integrated approach based on the principles of logistics. Ensuring coherence scale as business organizations, and federal agencies, as well as science and education, to reducing costs on a national scale. It serves the interests of consumers and would be a real step forward in improving the competitiveness of goods and services. (Benson, Whitehead, 1990)

A serious problem is training in the field of logistics. The need for speedy implementation of logistics thinking in the practice of senior and mid-level staff of various enterprises and so on. The need for intensive training in the specialty "Logistics", re-training and advanced training in the field of personnel middle and senior management. (Benson, Whitehead, 1990)

2.1 Obstacles in developing logistics in Germany

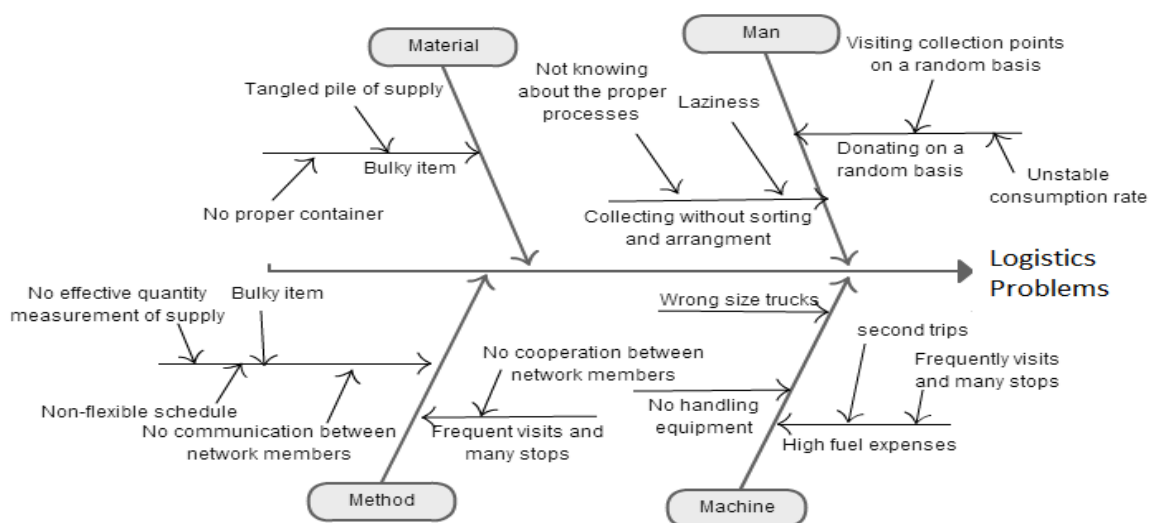
Transport is an important factor in economic development. Formation of market economic relations strengthens the role of transport as well as with his direct participation formed regional commodity markets. Becomes more urgent the main task of transport - faster turnover of wealth, delivery of finished products. Because it directly affects the economic interests of both producers and consumers.

Road-transport in Germany - one of the largest units of its economy. New economic structures do not trust the existing transport sector, as the public transport objectively cannot work the way it should be to new customers. For this purpose, it is necessary

to create conditions for improving the economic situation of the company and increase the competitiveness of goods by reducing transport costs in road transport.

For effective planning and coordination of production processes need accurate forecasts that allow in advance allocate resources, rather than in response to the change has already begun to implement costly changes in capacity utilization or the use of reserves. Forecasting increases the efficiency of logistics, because it creates an opportunity for the exchange of information, rather than stocks. Using modern technology integration forecasts that meet the information needs of logistics, a procedure was developed making effective quantitative forecasts, eventually the actual score is composed of six elements: a basic amount of resources, seasonality, trends change over time, cyclical factors, the effect of stimulation and random fluctuations. Baseline assessment - the average value and the remaining elements provide a correction factor. (Benson, Whitehead, 1990)

Not every forecast includes adjustments for all these factors, but in order to be able to identify them, to follow their dynamics and, if necessary, needs in accurately follow the socio - economic phenomena in the country. The technique is based on the methods of predicting the dynamic, to determine correlations between the independent variables. (See Graph 2)



Graph 2. Logistics problems. Fish-bone diagram.

2.2 Definition, main features and properties

As a logistics, system can be considered as an industrial enterprise, territorial-production complex, and commercial enterprise. The purpose of the logistics system - delivery of goods and products in a given place, in the right quantity and variety, as much as possible prepared for production or personal consumption for a given level of costs. Logistics system - a relatively stable set of links (structural / functional units of the company, as well as suppliers, customers and logistics intermediaries), interconnected and integrated unified management of the corporate strategy of business organization. (Benson, Whitehead, 1990)

The use of the term "logistics network" allows a shorter definition. Logistics system - a set of logistics network and system administration, formed a company to implement its logistics strategy (tactics). Logistics management system, like any system, the reality may be at different stages of development and different degrees of completeness of coverage of the various components of production and marketing. (Benson, Whitehead, 1990)

Logistics systems for the first degree of completeness of coverage of components typical of the functions of the organization of storage products, ready for dispatch, and transportation to consumers. This system provides damping at the output through proper and timely response to the daily peaks and fluctuations in consumer requests and unanticipated delays in product delivery in meeting these requests. (Hadjinsky, 2003)

Logistics systems for complete coverage of the second degree is characterized by the spread of the components of their competence to output the actual production. Such systems, along with coverage of transportation of products to consumers and stores ready for dispatch products that tend to systems of first degree of completeness, also include in-plant stocks of finished products. The functions of such systems include order processing, customer service, storage of finished products in the company and management internal stock. (Hadjinsky, 2003)

Logistics systems for third-degree exhaustiveness components characteristic distribution of their competence in addition (compared with the systems of the second degree of exhaustiveness components) to the input warehouses, delivery system of raw materials, the procurement and supply, as well as the movement of materials during the manufacturing process. In line with this extended competence, such systems, in addition to the previously discussed, perform the functions of procurement and delivery of raw materials and components, inventory management of raw materials and components, as well as the level of work in progress. Logistics management systems, the third level is to generate preventive effects, but is not limited to an adequate response to spontaneous deviations. (Hadjinsky, 2003)

Finally, the logistics systems of the fourth degree of exhaustiveness components extend their competence to all elements and stages of production and sales process, including planning and management of its own production. This allows you to combine the results of marketing research to operations planning, production, logistics and finance. Logistics management based on the principle of economic integration and the idea of compromise. (Hadjinsky, 2003)

Elements of the logistics system must work as a unit to achieve the greatest ability to unite and work together. For logistical systems, important factor is the ability to respond quickly to market changes, as well as take into account the various changes in the environment. These environmental changes may include changes in supply and demand for goods and services, breakdown of equipment, changes in road and tariffs, input or output failure of various transport channels, changes in rates on loans. Due to these features, all the elements of logistics systems represent a single system having a feedback and flexible in responding to what is happening. (Hadjinsky, 2003)

Information communication between the individual elements of the logistics chain are implemented by using a set of modern means of information processing and

transmission. Usually it is a computerized system for collecting and processing information. For their construction using local area networks, which provides through the transfer and processing of information and two-way access to the external network. (Hadjinsky, 2003)

Construction and investigation of logistics chains formed by information and financial flows, is a great practical importance, since the movement of material resources and finished goods out of sync. Does not coincide with the associated flow of information and funds. For example, information that are shipped and stored in a way the customer comes before the product itself. Time of sale of goods and logistics services are usually cut off from the receipt of goods or services (for example, prepayment). In addition to the mismatch in time, studied streams dissociated and separated in time. Problems arising due no isomorphism flows significantly complicate the adoption of effective logistics solutions and require constant attention. (Sarkisov, 2001)

Typical tasks include traffic management of material resources and finished products' distribution network, optimization of costs associated with the logistics operations of individual parts of the logistics system, and overall costs, reducing the time of delivery of material resources, finished products and the run-time customer orders, inventory management and material resources finished products, ensuring a high level of service quality. (Sarkisov, 2001)

Logistics companies is mostly informational. The higher the level of the logistics system, the greater the flow of information and less tangible. The logistics system corporation is a coherent system of management constructed in such a way that each level operates only with the information that it needs. Clarity of operation is particularly important in the market for final goods corporations' economy is competitive, market-oriented. Within the corporation is merely a planned economy, self-supporting character, and prices are determined by calculation. Successful corporate activities demonstrates the feasibility of interpenetration and successfully complement each other's market and planned systems. (Sarkisov, 2001)

3 TRANSPORTATION

Germany has a strong transportation system that includes rail, sea, road, air and pipeline transport. Each of these modes is a set of tools and means of communication, as well as various technical devices and structures to ensure proper and efficient operation of all sectors of the economy. Road-transport in Germany - one of the largest units of its economy. New economic structures do not trust the existing transport sector, as the public transport objectively cannot work the way it should be to new customers. For this purpose, it is necessary to create conditions for improving the economic situation of the company and increase the competitiveness of goods by reducing transport costs in road transport.

The portion of the transport network are railways, maritime and shipping waterways, roads, pipelines for oil and gas transportation network of overhead lines. In addition to the means of communication, transportation, and a means to move products - cars, locomotives, cars, ships and other rolling stock. For technical equipment and facilities, include transport stations, depots, workshops, repair factories, enterprises maintenance and so on.

Depending on the strategy and objectives of the company Ravenol, the company produces a variety of products for delivery. It is considering location of production, technical and economic characteristics. The decline in production, the rise in prices, inflation and reduced solvency of clients, as hence, reduction in investment in the development of transport.

All modes of transport have their own material and technical base, documentation, and technical and operational performance. In detail, all these elements are studying transport specialists, and logistics professionals should be aware of those elements that occur to them in practice in solving logistical problems. (Sarkisov, 2001)

3.1 Transport in the supply chain

Transport is part of the economic activity, which is associated with an increase in the degree of satisfaction of people and businesses by changing the geographical location of goods and people. Transport - means of satisfying needs through transportation of goods and passengers. Transportation - one of the key logistics functions associated with moving goods vehicle on a particular technology in the supply chain, consisting of logistics operations and functions, including forwarding, cargo handling, packaging, and transfer of ownership of the goods, risk insurance, customs procedures, and so on. From an economic point of view, transport is one of the defining elements of the production process. The production and use of goods, there are two limiting factors - the time factor and the spatial factor. (Sarkisov, 2001)

The time factor is that the product produced today may only be required after a certain period. Solve this problem by storing. The content of the spatial factor is that the producers and consumers of goods are rarely found in one place, and some distance from each other. Linking production and consumer, transport allows expanding the boundaries of production. Transport itself becomes gradually because the spatial factor - the development of transport and transport technology allows you to build further away from the production sites of consumption goods. Under market conditions, transport is always profitable. (Sarkisov, 2001)

Movement of goods - a change of location, subject to the principle of efficiency. This process should be economically justified, since the movement of goods spent money, time and environmental resources. Transportation requires financial resources - in the form of internal costs for transportation of goods own rolling stock, and external costs for this purpose commercial or public transport. Thus, function defines the main transport its goal - delivery of goods to their destination as quickly as possible, cheaper, and with the least damage to the environment. It is also necessary to minimize the loss and damage of goods transported while fulfilling customer requirements for timely delivery and to provide information about the goods in transit. (Sarkisov, 2001)

Storage of goods as a function of the transport takes place in order to save money on the feasibility of re-handling and unloading (when the cost of such operations exceed the losses from idle loaded rolling stock) failure of storage capacity and the need to change the route of cargo. This increases the residence time of goods in transit. In general, the use of vehicles for temporary storage is expensive, but it is justified in terms of overall costs, if transshipment is overhead, if there are no other opportunities for storage, or if the extension is acceptable delivery times. The main principle of transport logistics, as well as all the logistics in general, is to optimize costs. (Sarkisov, 2001)

Savings due to the scale of cargo due to the fact that the larger the load, the lower transport costs per unit of weight. Likewise, more powerful forms of transport - rail and water - cheaper per unit weight of cargo, than the less powerful - road and air transport modes. Economies of scale arises from the fact that the constant component of transportation costs is allocated to all of the goods so that the larger it is, the lower the unit cost per unit of weight. The structure of fixed costs include administrative costs associated with the processing of orders for transportation: the cost of a simple vehicle during loading and unloading: the cost of clearance of payment documents and operating costs. These costs are assumed constant, as their value does not depend on the size of the consignment. (Sarkisov, 2001)

Savings due to the range of the route due to the fact that the longer the route, the lower transport costs per unit of distance. For example, transportation of cargo bottom at a distance of 800 km will be cheaper than shipping two goods (the same total weight) at a distance of 400 km. This effect is also called the principle of decay, as unit costs per unit distance is reduced with increasing distance trucking. Savings due to distance transport occurs due to the same reasons as the economies of scale transportation. Fixed costs associated with loading - unloading transport, should be attributed to variable costs per unit path. (Sarkisov, 2001)

3.2 Tariffs and usage rules

Payments for services rendered by transport organizations, carried out by means of transport tariffs. Rates include:

- Fee charged for the carriage of goods:
- Fees for additional transactions related to shipping;
- Rules for calculating the fees and charges.

Transport rates are a form of product prices of transport. Their construction should provide compensation for the transport company operating costs and the possibility of making a profit and for buyers of transport services - the ability to overlap in transport costs. As you know, one of the major factors influencing the choice of the organizer of delivery is the cost of transportation. The fight for customers, inevitable in a competitive environment, can also make adjustments in freight rates. (Cone, 2003)

The size of the tariff boards of road transport is influenced by the following factors: distance transportation, cargo weight, volume and weight of the load carrying capacity of the vehicle, the total mileage, type of car, the area in which the shipment. Each tariff for transportation of goods by road does not take into account all the factors, and some of them, the most important in these conditions of carriage. In all cases, the fee for use of the car affects the area in which the shipment is done. (Cone, 2003)

Payment for the carriage of goods by sea transport is carried out by freight rate. If the goods should be in the direction of sustainable cargo flow, the carriage is performed linear navigation system. In this case, the load is moving on schedule and is payable on the declared tariff. In the case where when the carriage of cargo ships work is not associated with permanent navigation area, with permanent ports of loading and unloading is not limited to a certain type of cargo, freight paid by freight rate. (Cone, 2003)

For strategic forecasts requires reliable information on the likely future development of traffic to which those decisions relate. This information should be obtained in a given time frame under specific conditions. (Cone, 2003)

3.3 Indicators of use of vehicles

Vehicles and transport communications are characterized by high capital. Therefore, it is a fair statement of the majority of scientists - economists, that the high investment component of transport is justified only if the efficiency of its use. It is no secret that in some cases the car go for the stuff, comes with nothing, making the return journey. In addition, in other cases, the transport is organized so that the goods transported in both directions: one way for himself in another way freight outside organizations. Even the transportation of its own goods in some cases, can be arranged so that the machine will be loaded into both ends of the journey. (Cone, 2003)

3.4 Documentation of transportation

Generalized list of documents accompanying the goods:

- 1) Waybill.
- 2) Commercial invoice.
- 3) Act boot of the vehicle.
- 4) Quality certificate if the goods are of industrial origin.
- 5) Quarantine certificate if the goods are of vegetable origin.
- 6) Certificate of origin.
- 7) Power of Attorney for transportation.
- 8) Overhead.
- 9) Combined statements (the list of places the piece list of products with serial numbers). (Cone, 2003)

Waybill - a document confirming the conclusion of the contract of carriage, which characterizes the cargo, its place of loading and unloading, the length of the route, and containing the mark of the consignor and consignee. (Cone, 2003)

As a basic document for shipping, waybill also serves as a basis:

- 1) To write down of inventory from the shipper;
- 2) For posting these inventory items at the consignee;
- 3) To account for transport work and other services provided by the transport company for shippers and consignees;
- 4) For settlements between the transport company and its clientele for services rendered. (Cone, 2003)

Waybill contains the following data:

- 1) Date and place of consignment;
- 2) Name and address of the shipper;
- 3) The name and address of the carrier;
- 4) Date and place of acceptance;
- 5) The place designated for delivery (destination);
- 6) Name and address of the consignee;
- 7) The common designation of the nature of the goods and of his package, and in the case of transport of dangerous goods - they are usually taken by the designation;
- 8) Gross weight of the goods or expressed in other units of measure the amount of cargo;
- 9) The number of packages, the presence of special labeling numbering places;
- 10) Payments related to the carriage (carriage charges, supplementary charges, customs duties and fees) and other fees charged to the conclusion of the contract of carriage to the time of delivery to the consignee;
- 11) Information about the availability of instructions required to perform customs clearance procedures and other procedures. (Cone, 2003)

Waybill may also contain additional information:

- 1) A statement that overloading during transportation is not permitted;
- 2) Payments that are required to implement the sender;
- 3) The amount payable upon delivery of the goods to be transported;
- 4) The declared value of the goods;
- 5) Sender's instructions to the carrier regarding insurance of the goods;
- 6) Agreed by the parties of the contract period, during which the shipment;
- 7) A list of the documents handed to the carrier by the sender cargo. (Cone, 2003)

Roadmap describes the performance of the driver of production tasks (traffic), and takes into account the mode of operation of the driver and the vehicle, the consumption of fuel and lubricants. Used for operational accounting. Waybill contains the following information:

- 1) Surname, name and patronymic of the driver;
- 2) Driver's license number;
- 3) surname, name and patronymic Manager issuing a waybill, and his signature;
- 4) The result of a motor vehicle inspection mechanic;
- 5) The result of the medical examination of the driver;
- 6) The speedometer when leaving the vehicle to the route and return to the route;
- 7) Brand and quantity of fuel issued;
- 8) Type of cargo;
- 9) Time of departure and return of the vehicle;
- 10) The route of the vehicle. (Cone, 2003)

A list of personal documents, which should be the driver in the performance of international traffic:

- 1) Call passport with valid dates of entry and exit visas countries, on which the trip.
- 2) The certificate of international standard for the right to control the car.

- 3) Help the right to export foreign currency.
- 4) Medical insurance.
- 5) Credit card charging (recommended). (Cone, 2003)

List of documents for the car, which should be the driver in the performance of international traffic:

- 1) Waybill.
- 2) The certificate of registration of the vehicle in the traffic police
- 3) Certificates of fitness of the vehicle to the international carriage of goods by environmental and technical requirements.
- 4) The certificate of approval of the vehicle to the international transport of goods under customs seal
- 5) Talon technical inspection to the traffic police.
- 6) Documents on the insurance of civil liability of vehicle owners.
- 7) Permission for Carriage on foreign territory
- 8) License cards to the right of shipments for international traffic.
- 9) A certificate of approval of the vehicle transport of perishable or dangerous goods.
- 10) Carnet de passage (guarantee temporary importation of vehicles in the countries of the Middle East and the subsequent removal). (Cone, 2003)

The certificate is issued for each shipment exported vary is shipped to one shipping document (bill). Quality Certificate is issued only on manufactured goods and prepared in the prescribed form or the form specified by the customer. Certificate of origin - a signed declaration, declare the country of origin. (Cone, 2003)

List of documents for the cargo, which should have a driver in the performance of international traffic:

- 1) The TIR Carnet (carnet T1K).

- 2) The waybill (CMR cargo manifest with the accompanying shipper specifications, certificates, sanitary passport and other travel documents (certificate of quality, certificate of veterinary quarantine certificate).
- 3) Cargo customs declaration prepared by the consignor.
- 4) Certificate of liability insurance carrier (a copy of the insurance policy).
- 5) The invoice for the goods.
- 6) The license for the export and import of goods
- 7) Set the overhead for return loading of the vehicle. (Cone, 2003)

Invoice - a document drawn up by sending cargo by one enterprise to another enterprise. The invoice contains the following information:

- 1) Details of the buyer and seller (name and address of each party involved in the transaction);
- 2) Invoice number;
- 3) Number and date of delivery of the contract and its terms and conditions;
- 4) The name and code
- 5) Type and number of packages;
- 6) Gross weight of the goods;
- 7) The unit price of the goods and the total value of the goods;
- 8) The date of preparation of an invoice;
- 9) Payment terms;
- 10) Stamp seller.

Special permit - one-time permit the passage of the vehicle, the maximum total and (or) axle weight or dimensions that exceed the parameters set for travel by road. (Cone, 2003)

4 WAREHOUSE

Moving the material flows in the supply chain is impossible without concentration in certain areas of necessary supplies, storage for dedicated storage. Movement through the warehouse due to the cost of labor and materials, which increases the cost of goods. In this regard, the problems associated with the operation of warehouses, have a significant impact on the rationalization of movement of material flows in the supply chain, the use of vehicles and distribution costs. (Linder, Harold, 2002)

Modern large warehouse - is a complex technical structure, which consists of many interrelated elements, has a definite structure and performs a number of functions to transform the material flow as well as the generation, processing and distribution of goods among consumers. In this case, because of the variety of parameters, technological solutions, equipment design and characteristics of different nomenclature, handled cargo warehouses are complex systems. At the same time the warehouse itself is only part of the system of higher level - the logistics chain, which forms the basic and technical requirements for the storage system sets goals and criteria for its optimal functioning, dictates the terms of processing load. (Linder, Harold, 2002)

Therefore, the warehouse should not be considered in isolation but as an integral component of the supply chain. Only such an approach will ensure the successful implementation of the basic functions of a warehouse and a high level of profitability. It should be borne in mind that, in each case, for a particular store, warehouse system parameters are significantly different from each other, as well as its elements and the structure, based on the relationship between these elements. When create a storage, system should be guided by the following principles: a customized solution taking into account all influencing factors can make it profitable. A prerequisite for this is a clear definition of functional tasks and a thorough analysis of the processing load, both inside and outside the warehouse. Any costs should be economically justified. The main purpose of the warehouse - the concentration of stocks, storage and

ensure the smooth and rhythmic execution of customer orders. (Linder, Harold, 2002)

4.1 The role of warehouses in logistics and a brief description

Between production and transport, transport and consumers should always be storage facilities, designed to smooth out uneven cycles of production, consumption and operation of various types of transport. In this regard, in the overall promotion of material flow of logistics chains from the producer and the consumer must take into account the presence of a network of different storage systems. (Linder, Harold, 2002)

Storage systems can be created at the beginning, during and at the end of the movement of transport freight traffic or industrial processes for the temporary accumulation of goods and timely provision of industrial and commercial structures with material resources in accordance with the internal or market needs. (Linder, Harold, 2002)

Set of operations that are performed at various warehouses, fundamentally very similar. The reason is that different processes logistics warehouses perform similar functions are:

- Creation of stocks of raw materials, semi-finished or finished products
- Conversion of material flows
- The orderly storage and preparation for use in the process of moving object flows from producer to consumer object.
- Increase the rhythm and timing of production and operation of transport; improve land use enterprises; reduce downtime of vehicles and the total logistic costs; layoffs from unproductive handling and storage operations, and so on. d. Maintaining the quality of products to further its intended use. (Linder, Harold, 2002)

Storage systems - are essential elements of logistics systems. They allow you to overcome the temporal, spatial, quantitative and qualitative mismatch between the availability and demand for materials in the production, sale and consumption.

The main objectives of the logistics storage systems are:

- 1) Organization of a rational system of storage operations at minimal cost to perform logistics operations.
- 2) Efficient use of all components (storage areas, handling and processing equipment, access roads, and so on.
- 3) Identification and mobilization of surplus, unused property.
- 4) Provision of timely and complete information about the dynamics of changes in inventories. (Linder, Harold, 2002)

The more established public warehouses, transport terminals, the better logistic service. This is especially important for small and medium-sized enterprises, which account for over 95% of the total number of enterprises and who are actively using the form warehouse logistics. However, the rising cost of transportation and warehouse processing of products by consumers and the cost of logistics intermediaries to establish appropriate systems for storage and processing. With consolidation and elimination of transformation, centers reduced logistics costs, but worsens logistic service. It is unprofitable and consumers (the content of their own storage systems, and so on surplus stocks), and logistics intermediaries (logistics services for them are a means of making a profit). (Linder, Harold, 2002)

4.2 Procuring in warehouse

Material resources are part of the working capital of the enterprise. Revolving funds - these are the means of production, which are consumed in each production cycle, the entire transfer their value to the finished product and the production process change or lose their consumer properties. In current assets include:

- 1) Basic and auxiliary materials, fuel, energy and semi-finished products obtained from;

- 2) Low-value tools and spare parts for the repair of equipment;
- 3) Work in progress and semi-finished products of own production;
- 4) Containers.

The largest share of the material resources of the enterprise constitute the basic materials. These are the objects of labor, reaching for the manufacture of products and forming its main content. (Makarenko, 2003)

Organization and planning of material resources is one of the most important branches of industrial activities. All the work of the organization and planning of material resources is carried out in the direction of creating conditions for maximum savings while improving product quality. (Makarenko, 2003)

Getting to the analysis of the use of materials, primarily determine the relative their savings or cost overruns. To this end, calculate how much material should be spent in a company actually achieved production volume and product mix, subject to planning regulations, and compare it with the amount of actual costs. Planned expenses are translated in accordance with the actual output only basic materials, process fuel and the types of auxiliary materials, the consumption of which is directly related to the production of the main products of the enterprise. Consumption of other materials does not depend directly on the volume of production, and therefore is not subject to recalculation. (Makarenko, 2003)

Factors that determine savings in material can be reduced to the following major groups: physical, technological, engineering and design, organizational and economic. The first group of factors - the material determines the choice of best materials, which would reduce their consumption, particularly to reduce the consumption of scarce materials and to reduce the amount of material costs in the cost of production. Using technology factors is the choice of materials saving options such processes, which reduce the waste, produced during the production. Completion of the analysis is to develop practical measures to improve the use of material resources,

based on them to establish new, progressive norms, reflecting the advanced production experience and scientific and technological achievements, to be implemented in the upcoming planning period. (Makarenko, 2003)

Established industry standards allow for a more reasonable to develop plans and performance evaluation of the enterprise. They should have the character of recommendations so that, depending on the operating conditions of each company could adjust them with careful study deviations from the norms of the industry average. (Makarenko, 2003)

4.3 Storage and Commercial documentation

Regulatory documents governing the acceptance, storage and placing on holiday products:

- 1) Instruction on the procedure for acceptance of goods production and technical purposes and consumer goods in quantity.
- 2) Instructions on the procedure for acceptance of goods production and technical purposes and consumer goods in quality.
- 3) Trading book.
- 4) Order Acceptance.
- 5) Supply Agreement.
- 6) The log of customer orders.
- 7) Card unmet demand.
- 8) Consolidated qualifying list for the picking of the complex.
- 9) Invoice.
- 10) The packaging label.
- 11) Journal of transmission products from the warehouse to the expedition.
- 12) The register of products and invoices received by an expedition from a warehouse and sent to the buyer.
- 13) The bill of lading.
- 14) Pass for entrance (exit) to (from) on the company's territory.

- 15) Application for road transport.
- 16) Logbook use of motor vehicles.
- 17) The card inventory accounting package.
- 18) The Book of registration documents handed person exercising centralized delivery and delivery of products.
- 19) Scorecard performance of supply contracts.
- 20) The Book of operational accounting delivery of products to customers. (Cone, 2003)

Accounts are applications to contracts concluded for the supply of products to customers. Contain the range of products, planned to sell, its quantity, cost and delivery time. Inventory label is applied to account for the actual availability of products in stock at the time of the inventory when the inventory commission is not able to immediately calculate the production and record information about it in the inventory. Collation statements are prepared on the types of products, the inventory have been identified deviations from the credential. In the ordering statements reflect the results of the inventory. Differences between accounting and inventory lists of data (the actual availability of products). (Cone, 2003)

Invoices from external suppliers are the basis for the posting of products in stock, The basis for the creation of income bill.

Purchase Invoice is designed to account for arriving at the warehouse products.

In case of inadequate quality products manufacturer shall be notified of the call.

The notice of the call to the manufacturer (the sender), states:

- 1) Name of the product, date and invoice number or transport document number, if by the time the call is received through;
- 2) The main deficiencies found in products;
- 3) The time appointed for the acceptance of products in quality and completeness (within the set deadline for acceptance);
- 4) The number of products of inadequate quality or incomplete products. (Cone, 2003)

Unified forms of primary documentation of accounting products include:

Power Of Attorney:

- 1) apply for registration of a person's right to act as a trustee company in obtaining the goods allocated by the supplier along (invoices, contracts, orders, agreements);
- 2) serves as the basis for products in stock supplier, railway stations, wharves, airports and confirms the right of the person to receive the products. (Cone, 2003)

Details of the power of attorney:

- 1) Number and date of issue;
- 2) Validity period (determined by the possibilities of obtaining and export of products);
- 3) The name and address of the payer and recipient (proxy);
- 4) Bank account of the payer;
- 5) The name of the supplier;
- 6) Position, full name, passport information about the person whose name is given power of attorney;
- 7) Number and date of the document, which is the basis for a holiday product. (Cone, 2003)

The reasons for which authorization is invalid:

- 1) Power of attorney issued in violation of the order of its filling or unfilled requisites;
- 2) Power of Attorney has corrections and blots;
- 3) Do not presented a passport details of which are specified in the warrant;
- 4) Graduated from the validity of the power of attorney;
- 5) received a message recipient revocation of the power of attorney. (Cone, 2003)

Packing (inventory) sheet is drawn up after the end of the package. In the sheet to fit, the data for each subject individually wrapped or boxed. In the packing list shall include:

- 1) Serial number of the box according to the data contained in the labeling;
 - 2) Contents of the box;
 - 3) Place and date of packing;
 - 4) Guidance on the adherence of products (goods);
 - 5) Telephone number of the recipient;
 - 6) Address and physical (legal) person who is the recipient of the goods (cargo).
- (Cone, 2003)

Documents drawn vacation products from the warehouse:

- 1) Intake sheet;
- 2) Sales Invoice and others. (Cone, 2003)

You may also have the following report documents the status of products stored in the warehouse:

- 1) A daily report on the state of the stored products;
- 2) Report on the shelf life of products;
- 3) A daily report on the admission of goods to the warehouse;
- 4) Daily report on the shipment of goods from the warehouse;
- 5) Special reports (of loss, damage to the product as it is received at the warehouse), accompanied by photographs;
- 6) Report on the blocked products (blocked in accordance with the instructions of the client, for example, because of expired);
- 7) A report on the repackaged defective products;
- 8) A report on the destruction of defective products;
- 9) Report defective products (products in the preparation of the warehouse, destruction, repacking);
- 10) Report by the presence of empty pallets. (Cone, 2003)

Daily report on the state of stored products includes the following information:

- 1) The balance of the balance of production on the evening of the previous business day;
- 2) All income products to the warehouse for a working day;
- 3) All products are shipped per working day;
- 4) New balance balance products comprising products with different status (e.g., the products to be shipped, but not yet shipped);
- 5) The remainder of products available in stock. (Cone, 2003)

Report on the shelf life of products includes the following information:

- 1) Warning about the expiration date of production for the 6 months prior to its expiration on each product;
- 2) Expiry dates for each product;
- 3) List of products by type of shelf life (expired, 7 days prior to the expiry date of 14 days). (Cone, 2003)

Daily Report for the admission of goods to the warehouse contains the following information:

- 1) All receipts of products per day.
- 2) Information and documents on receipt of vehicles (information sheet, the act of acceptance of goods to the warehouse, warehouse and signed by the driver);
- 3) Information and copies of documents accompanying products. (Cone, 2003)

Daily report on the shipment of products from the warehouse includes the following information:

- 1) All products are shipped carried out per working day;
- 2) All orders are in the process of picking;
- 3) Information on products shipped with an indication on road vehicles;
- 4) Copies of invoices marked warehouse manager about the shipment. (Cone, 2003)

5 INFORMATION SUPPORT LOGISTICS

Approach to the objects of ensuring product distribution systems expresses one of the main features of logistics, both science and practice areas. System research - a natural need for scientific and technological progress allows to combine and use the most advanced and efficient methods available to the science. In the study of any system we are faced with the problem of identifying the principles of their construction, operation and interoperability with the environment. (Kozlovsky VA, Kozlovsky EA, 2002)

With the rationalization of logistics, more attention is drawn to the information flow, whereby the material flow plan, manage, and control it. Improvement of Informatics and organizations often can bring a greater effect than technical innovation. Every movement of materials related to the transfer of information. Some messages ahead, advising his arrival. Advance information allows the recipient to timely prepare its acceptance. Other data accompany the goods; they characterize the type and quantity of goods, sender, recipient, and the owner, pay attention to the dangerous properties of the product. The third type of information should be for material flow and often goes in the opposite direction. (Kozlovsky VA, Kozlovsky EA, 2002)

Information becomes a factor of production logistics. Thanks to her, could be reduced costs on warehousing (better inventory management, coordination of actions of the supplier and the consumer, replacing the storage of finished goods warehousing of finished products and raw materials). Thanks to the information, it is also possible to accelerate transportation (consistency of all links in the transport chain). Lack of timely information causes an accumulation of material, because the uncertainty of the consumer, as well as uncertainty about the supplier, usually makes you want to insure. (Kozlovsky VA, Kozlovsky EA, 2002)

The presents on market require significant enterprise efforts. It should be faster to upgrade products, it is better to own prices, consider the costs, and analyze the

effectiveness of individual orders and products. From high-volume production of "warehousing" (at the discretion of the manufacturer, i.e. the specific orders at the time of the start of production in a number of industries are increasingly moving to the piece production of specific orders with fast delivery. That the company can respond quickly to market demands, it is necessary to increase: transparency (it should have relevant data on the status and trends of the market), flexibility (changes in market requirements necessary to rapidly deploy into production); efficiency (market requirements must be met with an extremely low cost to the company to withstand competition). (Kozlovsky VA, Kozlovsky EA, 2002)

Information technology can greatly facilitate the implementation of these requirements. Certain efficiency gains can be achieved with the help of local computer systems, but transparency and flexibility are significantly increased only in the application of integrated information and management systems that "straddle" the boundaries between departments. The integration of information processes means that any information is generated and written to the database only once, and it can be used for different purposes. Information processes are interrelated and interact through a single database. The content and structure of the entire database must be designed in conjunction with the requirements of all enterprise information systems. (Kozlovsky VA, Kozlovsky EA, 2002)

5.1 Creating information systems in logistics

5.1.1 The functions of information systems

A significant element of any logistics system is a subsystem that provides transmission and processing of information, which upon closer inspection itself takes place in a complex information system consisting of various subsystems. Just like any other system, the information system should consist of interrelated elements in an

orderly manner and have a set of integrative qualities. Decomposition of information systems into components can be carried out in different ways. Most information systems are often divided into two subsystems: a functional and secure. (Johnson, Wood, Murphy, 2002)

Functional subsystem consists of a set of tasks that are grouped based on common purpose. Providing a subsystem, in turn, includes the following elements:

- Technical support. A set of technical means to ensure the processing and transfer of information flows;
- Provision of information, which includes a variety of directories, classifiers, codifiers, means a formalized description of the data;
- Software. A set of methods for solving functional problems. Logistics information systems, as a rule, is an automated system of logistics management. (Johnson, Wood, Murphy, 2002)

The organization of connections between elements in the Logistics Information System may differ significantly from traditional information systems organization. This is due to the fact that in the logistics information systems must ensure full integration of all elements of material flow management, efficiency and reliability of their interaction. (Johnson, Wood, Murphy, 2002)

Computing equipment is also used in the individual links of the supply chain to manage complex technical processes and to monitor them. In the area of economic control, on the contrary, the role of the regulator (the prerogative of decision-making) reserves the man and computer technology gives him the right information. To manage operational logistics processes and to control them is important dialogue with the computer in a mode on-line, which allows minimizing the response time of the regulator. For economic control is often sufficient to periodic batch processing. (Johnson, Wood, Murphy, 2002)

Due to the miniaturization and cheaper computing becomes possible to decentralize the approach to jobs. Decentralization computer can significantly reduce the amount of data transfer. Series data on logistics processes can be processed directly in the stand-alone unit, for example, in a warehouse. The principal idea of creating a decentralized database is the ability to make decisions on the spot with the information connectedness of all decentralized offices. (Johnson, Wood, Murphy, 2002)

All of these operations are the responsibility of logistics managers, and therefore have a clear, accurate and timely information - means to satisfy customer requirements for quality logistics services.

5.1.2 Types of information systems in logistics

Logistics information systems are appropriate information networks, starting with the daily demands of customers (representing purely stochastic variables) that propagate through the distribution and production to suppliers. Information systems in logistics can be created with the purpose of material management at the enterprise level, and can contribute to the organization of logistics processes in the regions, countries and even groups of countries. At the level of the individual enterprise information systems, in turn, are divided into three groups:

- Planned;
- Discretionary (or control);
- Executive (or operational).

Logistics information systems belonging to different groups, different as their functional and providing subsystems. Functional subsystems of different composition tasks. (Johnson, Wood, Murphy, 2002)

Planned or routine information systems. These systems are at the administrative level management and serve for long-term strategic decisions. Among the tasks may include:

- The creation and optimization of logistical chain;

- Management of semi-fixed. A little variable data;
- Production planning;
- The total inventory management;
- Reserve management and other tasks. (Johnson, Wood, Murphy, 2002)

Discretionary information systems (information systems for decision-making in the medium and short term). These systems are at the level of warehouse management or shop and serve to ensure smooth operation of logistics systems. Here are the following tasks:

- Detailed inventory control (storage location);
- Disposal of intra (or-plant) transport;
- Selection of goods on the orders and stock, register outgoing cargo and other tasks. (Johnson, Wood, Murphy, 2002)

Executive information systems. It creates at administrative or operational management. Information processing in these systems is carried out at a pace determined by the speed of its receipt in the computer. This so-called operation in real time, which allows to obtain the desired information about the movement of goods at the current time and to issue timely and appropriate administrative control actions on the control object. These systems can solve various problems related to the control of material flow, operational control service production, motion control, and so on. (Johnson, Wood, Murphy, 2002)

5.1.3 The construction and operation of logistics information systems

In accordance with the principles of the system approach, any system must first be examined in the relationship with the external environment, and only then within its structure. The principle of consistent progress in stages of creating a system should adhere to the design logistics information systems. Information system should be considered in the functional and organizational aspects. Functional structure can be represented as a pyramid, at the base of the pyramid functional logistics information

system is a system of transactions between the links of the logistics system, which determines the relationship between the functional units of the firm (in terms of implementation of logistic functions), logistics intermediaries and consumers of the company. Functional levels of logistics information systems are usually directly related to the distribution system of finished products of the company, in particular, to the activities of distribution centers. (Johnson, Wood, Murphy, 2002)

In order to optimize the results of evaluation of influence of external and internal environment of the firm on the behavior of the logistics system logistics manager must use the key information sources in the monitoring subsystem. There are two aspects to be considered. Firstly, the use of information personnel of the company to evaluate the effectiveness of their logistics solutions. For example, financial information, or the prices of finished products of competitors can give a comprehensive answer on the effectiveness of management; transport departments of the company can use Information about the size of consignments. Second, the logistics partner of the company, such as suppliers of material resources, resellers, carriers and consumers of finished products may also use the information subsystem to improve coordination and reduce their own costs. An important place in the subsystem belongs to predict, in particular, so its aspects as baseline data collection, evaluation of accuracy, and the use of the most effective methods of forecasting. (Johnson, Wood, Murphy, 2002)

Information Management System for logistics to perform the above functions must be properly organized. The specificity of this system lies in the fact that during its operation it needs to be able to affect all the functional subsystems logistic organization. On this basis, there are three ways of its organization: centralized, decentralized and outsourcing. (Johnson, Wood, Murphy, 2002)

With centralized method to work on information support is concentrated in one office (division) and reports directly to senior management of the organization through the Vice President (Deputy Director) Information Systems (Technology). The advantage

of this method of organization is to ensure high efficiency of work on implementation of new information systems and technologies. The disadvantages are the high cost of maintenance of management. (Johnson, Wood, Murphy, 2002)

With decentralized method to subsystem information, support specialists from different functional units perform the functions of information management in their subject area. The advantage of this method of organization is the highest level of domain knowledge management information systems, lack of - duplication of similar tasks and functions in different parts of the organization. With a specialized method in your organization do not units of information systems (technology; If necessary, the development and implementation of a new information system, these organizations are turning to specialized firms and perform work on a contractual basis. (Johnson, Wood, Murphy, 2002)

Outsourcing. This is typical for small organizations that cannot have their specialists in the field of information technology, full-time, and use the services of consultants. The advantage of this way of organizing information management system is a high level of scientific and methodological developments, the disadvantage - the difficulty of incorporating the specific features of the object. The choice of a method of organizing information management system depends on many factors, primarily on the size of the organization, its existing business processes, availability of funds. (Johnson, Wood, Murphy, 2002)

Information support system has now reached such a level of specialization that requires attention to their organization - is understood by modern leaders. Therefore, any small organization is composed of information services.

- Internal interconnection and interdependence of information flows should be causal;
- Hierarchical subordination of the information flows should be clear;
- The information system must be inherently integrative.

Logistics manager should have the necessary and full (enough) information for decision-making, and in the form required him. For example, information on stocks and customer orders are often in need of pre-treatment and is usually located, not where the logistics manager decides. (Johnson, Wood, Murphy, 2002)

Logistical information should come in time management system, as required by many logistics technology, especially based on the concept of "just in time". Timeliness of information is important for virtually all integrated logistics functions. In addition, many of the tasks in transportation, operations management, order management and inventory management are solved in real time («on line»). The same and require numerous tasks logistics monitoring. Requirements timely receipt and processing of information are realized with modern logistics technologies bar coding, implementation of standards EDI / EDIFACT. (Johnson, Wood, Murphy, 2002)

The information circulating in the logistics information system must be tailored to specific users, be most convenient for them to view. This applies both to firm personnel and logistics intermediaries and end users. Paper and electronic documents, intermediate and output forms, reports, certificates and other documents should be maximally adapted to the needs of all participants in the logistics process and adapted to interactively possible for many users. (Johnson, Wood, Murphy, 2002)

Information in the logistics information system should be aimed at identifying additional opportunities to improve product quality, service, reduce logistics costs. Methods for the preparation, transmission, display and pre-processing of information should facilitate the identification of "bottlenecks", conserve resources and reserves. The format of the data and messages used in computing and telecommunications networks logistics information systems should maximize performance hardware (memory, speed, bandwidth) Types and forms of documents, location details paper-dimension data and other parameters should facilitate machining information. In addition, the necessary information compatibility of computer and telecommunication

systems, logistics intermediaries and other users on the data formats in the logistics information system. (Johnson, Wood, Murphy, 2002)

Formation of information systems in logistics is carried out in a hierarchical manner, and in the logistics information systems numbering starts from the lowest levels. This principle was adopted to ensure the possibility of increasing the information system of higher rank, and its inclusion as a subsystem in generalizing the systems and networks of higher order, if it will be a necessity. The first level - is the level of the workplace (in the broad sense), for example, storage areas, machine to perform machining, place or premises for installation in packaging and labeling, and others. At this level, there is one or the other logistical operation with controlled material flow, namely its element (item, a single package, the desktop companion) moves, overloaded, packed, passes a particular treatment. The second level - the level of production area, shop, warehouse, etc., where there are processes of handling, packaging and transportation goods and work places. The third level - a system of transportation and travel goods throughout the supply system as a whole from the loading of raw materials and components to the delivery of finished products to consumers and payments for them. (Johnson, Wood, Murphy, 2002)

Logistics information systems based on computer-based, as well as other automated control systems are constantly evolving system. This means that their design should be possible to ever-increasing number of automation objects, possibility of extension of ongoing information system functions and the number of tasks. It should be borne in mind that the definition of the stages of creating the system. The choice of priorities has a great influence on the subsequent development of logistics information system and the efficiency of its operation.

The construction and operation of the logistics system based on the following most significant conceptual positions: Implementation of the principle of the system approach, which manifests itself primarily in the integration and interaction of all the elements of a clear logistics system. This principle is reflected in the design and

implementation of a single process of production and transport system in the transition from the construction of certain types of equipment, the creation of integrated production - warehouse and production - transport systems. System approach offers new opportunities to reduce the duration and optimization of the production cycle, improve performance at all levels of the logistics system of harmonious development of their particularly during storage, warehousing, transportation and transshipment processes. Development of services at the present level of service, providing flexibility, reliability, high quality. (Johnson, Wood, Murphy, 2002)

5.2 Basics of inventory management

Size of the order is a fundamental parameter of the system. It is strictly fixed and should not be changed under any operating conditions of the system. Determining the optimal size of the order is therefore the first task to be solved when working with this system.

Basic inventory management system have a number of mutual advantages and disadvantages. System with a fixed size of the order requires constant regardless of the current stock in the warehouse. On the opposing, a system with a fixed interval of time between orders requiring only periodic monitoring the number of stock. The need to keep pace with the stock system with a fixed size of the order can be seen as its main drawback. (Stock, 2001)

Meanwhile, in a system with a fixed maximum size of the order desired reserve always smaller than in a system with a fixed time interval between orders. This leads to cost savings for the maintenance of a stock in warehouse by reducing the area occupied by reserves, which in turn is the advantage of a fixed size of the order to the system with a fixed interval of time between orders. (Stock, 2001)

In this embodiment, a system with a fixed size of the order for all components as in the presence of repeated failure, and at the repeated failures in the supply does not go into deficit, but falls below the guaranteed reserve. (Stock, 2001)

Therefore, to improve the performance of the system is necessary to raise the threshold of the order that will allow availability before placing. Then, in the presence of failures, the system will not fall below the guaranteed reserve and can withstand longer delays in deliveries. On the other hand, by increasing the size of the order increase the cost of transportation, unloading, storage inventory and storage for reservation. For a system with a fixed interval of time between orders is necessary to reduce the time interval between deliveries. This allows the system even in the presence of repeated supply disruptions leave untouched the warranty reserve, which makes it possible, if necessary, to sustain and longer delay the order and avoid possible losses with increasing demand. (Stock, 2001)

5.3 Obstacles in creating logistics information systems

In recent years, the rapidly developing science based on the so-called new logistics technology. Information systems occupy a central position these technologies. Logistics development in developed countries, not least stimulated the need rapid response of manufacturers to market conditions, the desire in a short time to adapt to changing situations.

The central idea is to logistics planning, management and control of business activities of all material and information flows associated with these activities. Information systems in logistics require rapid adequate response to market demand, tracking the time of delivery, optimization of functions in the delivery and supply chains, and more. (Omelchenko, 2003)

However, even here are difficulties and problems of development of information systems in the enterprise. One of the first problems - lack of information gathering in

enterprises. Information is not accurate, not operational in nature and not successive. Often, companies fail because of untimely or inaccurate information received. (Omelchenko, 2003)

Another problem creating logistics information system is the lack of logistics enterprises. This lack of a computer, which would collect, store and transform information and to facilitate the process of control. After all, at the expense of increasing the speed and efficiency of response to control data content profitable computerized communication system in the economic and industrial structures. Also significant is the problem in the field of foreign trade enterprises, in overcoming trade barriers, especially for countries that are in close proximity to each other, and that almost every day have a connection. (Omelchenko, 2003)

In order to facilitate work in this field need to introduce a single ethnic information communication system. It is designed to transmit information about the material flows and control their movement. This information system will combine the communication systems of many countries and in this regard, it will reduce the residence time of goods at border stations and the related costs. This system should always be open to users about data exchange, as well as for the use of this system is necessary - to create a common language, as a single. (Omelchenko, 2003)

The system will be available independent communication network, and this network will not be affected by other government information systems. It should also provide a non-stop flow of information between users and develop with increasing flow of information and the number of subscribers. For information support of all enterprises can be replaced some paper documents - electronic counterparts that allows you to synchronize the movement of material and information flows, as well as to reduce costs in the preparation of paper documents. In some cases, there are unnecessary legal complexity. But in order to get things done should follow the progressive technologies, such as: communication channels, built using lasers, optical fibers, space

communication and the like, as well as it's all very, very expensive, it also becomes a weighty problem for many enterprises. (Omelchenko, 2003)

5.4 Logistic information systems in company

In the organization and functioning of the supply chain are used corporate information systems, including the Internet - information and logistics centers in particular, uses a system of Inter-Logistics

The system «InterLogistics» provides interaction between all participants. The use of a common information space allows the exchange of data between companies themselves, and between their agencies and offices around the globe. All main modules of the system can be adjusted in accordance with the requirements of the customer. The modular concept of the system allows for the gradual introduction of a system to specific enterprises in accordance with the current task.

The main complex problems to be solved «InterLogistics»:

- The organization of intermodal freight transport;
- The organization of interaction between the companies responsible for the different modes of transport and traffic direction;
- Finding new customers, suppliers, transporters and other participants in the delivery of the goods;
- Keeping card files of various databases;
- Maintenance of an inventory of tariffs for services sold and bought the formation of the model accounts and issue invoices templates;
- Formation of the standard control schemes delivery process;
- Providing customers with information about the condition of the goods and the control of the transport process involved each individual mode of transport. The system allows you to control the warehouse operations - cargo handling, cargo inspection, labeling and bar coding, registration receipt and departure, repackaging, assembly and other operations. (Linder, Fearon. 2002)

Transport functionality provides the basic functions of transport logistics - reception and formation of orders, management plan and actual routes, scheduling movement and residence time of the completion of each stage of transportation, planned and actual costs for route calculation costs of transport at every stage, tracking goods in transit. In terms of financial support, the system has a mechanism generating invoices based on the notion of services and rates for this service. The system allows operating with any currency, generating documents in any language. (Linder, Fearon. 2002)

One of the most important aspects of the use of LIS (Logistics Information System) in the company - work with incoming customer orders. No less important aspect of the use of LIS in the company - its use in analytical work. In this case, there are three levels of application:

- The macro level, the external environment of logistics;
- The micro-level, intra-Wednesday;
- Intercompany level, communication with other companies.

In this respect, important questions within the competence of Logistics Company and relating to the use of computer technology:

- Integration of planning logistics operations planning at the level of the whole company;
- Integration of logistics operations with the operations carried out by the company as a whole;
- Develop a strategy for the development of logistics and personnel assignments for this department;
- Integration of information technologies used in the field of logistics within the company's technological networks;
- The integration of information technology with its partners;

It is important to use computer technology in the process of decision-making in the field of logistics. This may be applied following the database files. For example, in the area of operational management:

- File "transport": types of transport - category shipments - freight rates and freight - partners in the field of transport and so on.
- File "reserves": warehouse location - planned inventory levels - a critical level - the cost of maintenance of a stock - stock levels of incoming materials, and so on.
- File "warehouse operations": the cost of work - the rates for storage - power areas - performance storage technology - the rules of storage - the possibilities and limitations for storage of goods, and so the regime. (Linder, Fearon. 2002)

Special groups of data can be generated in the planning of logistics, the company's policy in the field of logistics, economics and accounting costs. With the help of electronic technology developed optimization model of logistic processes, hierarchical systems are built, using methods of simulation processes. The company that makes appropriate use of electronic computers in the field of decision-making, despite the need for a significant allocation to this area (according to some estimates, it takes up to 500 thousand euro, in the end wins. (Linder, Fearon. 2002)

In many countries of the world in all sectors of the economy, there is a replacement of paper data transmission technologies to-PC transfer standard texts of business documents (Electronic Data Interchange System (EDI) - System (EDI). In European countries to implement approved Economic Commission for Europe of the United Nations system of standard messages - EDIFACT used in the management of production, trade and transport at the international level. (Linder, Fearon. 2002)

Leading position in the development of EDI are the United States, where logistics linking occurred at the electronic level of activity of all major railroads and their customers. This system also applies to some of the automobile and aviation companies as well as companies operating in the field of maritime transport. The system allows its user to control transport of goods, to take appropriate management decisions to send the necessary transport shipping documentation. (Linder, Fearon. 2002)

Another system successfully used in the field of logistics and materials management is ESVID system, established in the United States. It allows you to adapt the action of transport and forwarding companies in ensuring the delivery of goods clients - industrial and commercial companies. Special place in the management of material flows takes a single standard EDIFACT created within the UN. This standard is a common language for the exchange of information on an international scale. System EDIFACT exchanged information flows between transporters, shippers, banks, customs authorities and other actors in the process of delivery. The meaning of the system - the creation of a convertible data file allows you to convert any document into a transport EDIFACT standards and making this document available to any subscriber network, involved in the carriage. (Linder, Fearon. 2002)

5.5 Modern information technology logistics management

Modern information technology, by which is meant the totality of information processing methods under study to make management decisions, designed to meet the specific requirements of the processing conditions of use. (Bowersox, Class, 2001)

A characteristic feature of information systems in logistics is the presence of feedback. The totality of the value system of logistics management and system of collection, transfer, storage and processing of information form a "closed loop". For example, information about the current number of sales and clientele is used to make logistical decisions about changing the volume, range and quality of manufactured and supplied products, which leads to the expansion and in general to change the terms of clientele and sales levels. In logistics, adjustable parameters are certain characteristics of different material streams: input, midway and output. (Bowersox, Class, 2001)

Information gathering can be performed at different points in the overall material flow and logistics control solutions may affect its various points. Thus, there may be local data paths, and all the logistics information system is generally a multi-loop.

Organization of the entire production and sales activities determines the point of gathering information and applications developed based on this information, logistics control actions. This determines the structure of the information system and its decomposition into subsystems forming local data paths. (Bowersox, Class, 2001)

Information systems in logistics, like any feedback system, characterized by quantitative indicators such as the magnitude of the delay and the degree of enhancement. Delay in the adoption of logistics solutions in comparison with the receipt of the information that led to these decisions may be different in scope and occur in different places of material flow. (Bowersox, Class, 2001)

Typically, the delay in the production and sales activities constitute week. Per unit of measurement take a week. Thus, an average transport time is one week, the delay accounting operations - three weeks post lag - half a week, the delay from wholesalers and various distribution points - an average of one week. Finally, the time between the decision to change in the production and the achievement of the respective values of the material flow at the outlet of the production unit is an average of six weeks. (Bowersox, Class, 2001)

Making decisions determining the information provided may submit a simple reaction to fluctuations in material flow with respect to one or between two levels. The length may determine it and detail developed and formalized chain of calculations. In all cases, a role-played by intuition, personal qualities and talent of the person or persons making decisions. (Bowersox, Class, 2001)

Based on the information received, the person , decision-makers should provide quality logistics management. Under the influence of logistic management of the supply, system should move from one steady state to determine the conditions surrounding economic environment in the new state corresponding occurred in this environment changes. Such a transition should occur in compliance with the required

quality. Centralized information system makes it possible to control the various reserves and operational management of relationships and interchangeable units engaged in mutual deliveries. (Bowersox, Class, 2001)

Others by providing logistical management of prompt and adequate information is widely used and the use of computer technology, the devices of the primary data collection and data entry, local area networks, visualization and documentation of information and Internet networks. For building integrated computerized information systems requires appropriate hardware, software and linguistic support. Typically, modern computer means forming an integral information system are combined using the hierarchical principle in LANs. These networks can be combined in a multi-level complex network structures. (Bowersox, Class, 2001)

5.6 The use of technology in logistics automated identification bar-codes

Through every link of the logistics chain is a large number of units of goods. At the same time within each level, products often move to the places of storage and processing. "The whole system of movement of goods - is continuously pulsating discrete streams, the speed of which depends on the capacity (power) production rhythm of deliveries, the size of existing stocks, and the rate of sale and consumption." (Young Master ID technology trade processes.) . In order to be able to effectively manage this dynamic logistics system is necessary at any time to have detailed information about the range of incoming and outgoing material flows from it, as well as material flows circulating inside it. (Schmidt, Thoroe, Schumann, 2013)

As the foreign and domestic experience, this problem is solved by the use with logistic operations with the material flow of microprocessor technology, the ability to identify (recognize) a separate unit load. We are talking about the equipment; it can scan (read) a variety of bar codes. This equipment provides information on the lo-

gistics operation at the time and place of the transaction - the warehouses of industrial enterprises, wholesale depots. Shops, transport, the information obtained is processed in real time, which allows the control system to respond to it in the optimum time. (Schmidt, Thoroe, Schumann, 2013)

To form the best relations between the partners requires streamlining the process of gathering data on the actual flow of material. Storage of information should be organized in such a way as to be able to carry out real-time search and use the necessary information. The collection of data about the elements of the material flow should be fast and with a high degree of certainty. The most modern method is the automatic identification and data entry of goods. This is achieved by scanning (computer reading) fixed on goods respective labels containing special barcodes. The very same reading performed by optical, laser devices mostly scanning. With the introduction of electronic data interchange and to continue to seek to reduce the time and reducing unnecessary costs of adding value system of bar-coding contributed. (Schmidt, Thoroe, Schumann, 2013)

Bar or strip codes (bar codes), are placed in a fixed combination of a rectangle on goods alternating thick and thin black stripes, separated by light intervals of different widths. Each of the ten numbers (some symbols) encoded in different combinations of these elements. Such combinations for each coding system, i.e. for each type of barcode is specific.

For maximum efficiency of the system requires the full integration of electronic data interchange system of automatic identification (barcode) and the shipment system, receipt and processing of material resources. The key point is the control gain material resources in real-time processing capability and communication via electronic data interchange. (Schmidt, Thoroe, Schumann, 2013)

Automated data collection based on using different types of bar codes, each of which has its own advantages. For example, a code with a rectangular contour - code ITF-

14 prints much easier to other codes, it can be used on corrugated packaging. Used to encode the consignments. In logistics in addition to other codes can be used code 128. This code can be coded batch number, date of manufacture, implementation period, and so on. (Schmidt, Thoroe, Schumann, 2013)

Bar code - a sequence of black and white stripes, representing some of the information in a form convenient for reading technical means. The information contained in the code can be printed in a readable form under code (decoding). Bar codes are used in trade, inventory control, library services, security systems, post business, assembly production, processing documents. In world practice of trade made use of barcode symbology EAN for labeling. In accordance with the order, the manufacturer of the goods causes him barcode generated using data about the country of the manufacturer and the manufacturer's code. Manufacturer's code assigned to the regional office of the international organization EAN International. Such a procedure for registration allows to exclude the possibility of two different products with the same codes. (Schmidt, Thoroe, Schumann, 2013)

Turnover (especially in retail trade and the supply of goods for export) found the exclusive use of the bar code type EAN (European Article Numbering). Using a special device cashier reads (scans) code for the point of sale. After reading and input of a bar code COMPUTERS cashier identifies this product is relevant details, renders them on the display and prints a receipt. (Schmidt, Thoroe, Schumann, 2013)

In logistics management objects are material flows, as consisting of separate units of goods and transport units of the parties. Note that the items identified and individually supplied to consumers in a store. At the end of movement of the material flow. At the same all the way from raw material suppliers, through manufacturing units through wholesalers and retail distributors to various expeditionary units and commercial bases material flows are combined movement of freight packages unified tar, containers, pallets, cassettes. In addition to the previously introduced standard for pallets, containers and other standardized packaging, currently Association EAN

offers standard and labeling of cargo units. In accordance with this standard details of the loading unit is placed in a uniform label. (Schmidt, Thoroe, Schumann, 2013)

If the computers in which the input bar and other relevant identification codes included in the integrated information system, the entered information is made available to all participants in the supply process in accordance with their powers. Thus, a pass-through system of accounting and control over the flow of material at all stages and areas of the source of supply of raw materials, production, all kinds of storage and distribution of finished products. Relevant information is available at the same time to all partners involved in the production and sales activities. The technology of bar coding and automated data collection on simple physical laws. The bar code is an alternation of dark and light bands of different thickness, built in accordance with certain rules. (Schmidt, Thoroe, Schumann, 2013)

The use of technology in logistics automated identification barcodes can significantly improve the management of material flows at all stages of the logistics process. Note its main advantages. In the production of:

- Creation of a unified system of accounting and control the movement of products and accessories parts at each site, as well as the status of the logistics process in the enterprise as a whole;
- Reducing the number of support staff and reports an exception error.

In warehousing:

- Automation of accounting and control the movement of the material flow;
- Automation of process inventory of inventories;
- Reduction of time for logistics operations with the material and information flow.

In trade:

- Creation of a unified system of material flow accounting;
- Automation of ordering and inventory of goods;
- Creation time customer service. (Schmidt, Thoroe, Schumann, 2013)

5.7 Communication systems

Necessary factor in the implementation of optimal control in modern conditions is the availability of automated enterprise communications system with their vehicles and monitor their movement. There are many different communication systems, but not all of them meet the requirements of traffic management.

Short-range communication in the range of 27 megahertz (CBS Radio)

Currently, commonly used near field communication means. The communication devices that allow drivers to communicate with each other, in some places, to communicate with the police and other travel services. This communication is very convenient for the exchange of information between drivers when driving in a column or group. (Schmidt, Thoroe, Schumann, 2013)

Means short-range work usually in the range of 27 MHz and have a capacity of several watts. It is not required to obtain any permits for their use of frequency bodies. These tools allow you to communicate in a clear line of sight. Radios are quite reliable and easy to operate. However, due to the short range, they do not provide the drivers with their communication controllers. (Schmidt, Thoroe, Schumann, 2013)

Sometimes, in order to increase the range amplifiers are used, that lift up the power of the transmitted signal 100 or more watts. It is also necessary to keep in mind that the use of the amplifier on the radio is a violation, and these radios may be seized control services, and that a large transmitter power harms the health of the driver. (Schmidt, Thoroe, Schumann, 2013)

The use of HF radio allows you to communicate at a greater distance than with radios 27-megahertz range. Unfortunately, there are a number of shortcomings in the application and HF radio. The main one is the reliability of communications; HF communications cannot guarantee reliable communication at a distance (50 kilometers). The possibility to connect a large extent dependent on the time of day, weather con-

ditions, and arrangement of the power transmitter and the receiver. The second disadvantage is the high workload HF band and as a result is noisy and low quality. (Schmidt, Thoroe, Schumann, 2013)

Even transmitters and large antenna fields cannot provide a reliable connection. No enterprise cannot afford to build such a radio center. A reduction in transmitter power and antenna size leads to a drop in communication reliability. In the application of HF radio, which analyze conditions due to the presence of noise, the signal level and automatically use the backup frequency, the best in the particular circumstances, you can slightly increase the quality and reliability of communications with less power and space, antenna fields. The price for this is the relatively high price of the equipment. However, this equipment cannot provide a reliable clock communication manager with his car. At the same time, it has a sufficiently large size and power consumption, which makes its placement on a motor vehicle. In addition, a serious problem is to obtain a permit for use of radio frequencies in the HF band. This concern will be on full-automated enterprise since HF equipment suppliers do not do. It should be noted that broadcasts on HF radio observations are closely monitored services. It should also be borne in mind that the driver, working with HF radio is in close proximity to the antenna and exposed to relatively high-power radio waves that can adversely affect his health. VHF radio waves are distributed over short distances, almost within sight. Therefore, their use for communication with the vehicles and control over their movement is possible only for local calls. Even when the radio base station on the lifting tower high communication range is less than 50 km. Communication range can be slightly increased using repeaters on the same towers. However, it should be borne in mind that the construction of each of these towers are about 70 meters and equipment necessary equipment it will require more than 50 thousand dollars. In the application of simple basic VHF radios or repeaters cannot link multiple machines simultaneously and subscribers. This system can work only for a very limited number of users. At the same time the use of VHF radios for local communication has some advantages. This is a relatively low cost of equipment and virtually free traffic. (Schmidt, Thoroe, Schumann, 2013)

Cellular communication is a mobile communication system, which is formed by a network of transceiver stations installed in cities or along highways. Each transceiver station covers a piece of territory. The city is divided into sections such territories as a honeycomb. When the driver of the vehicle picks up the phone, it listens to the nearest transceiver station, through it; it binds to its subscriber. When the vehicle leaves the area of the transceiver station is a neighboring tracking station transmits so and from cell to cell. Mobile operators - quite convenient and fast-paced way of communication. Former first elite because of the high prices of mobile phones, and especially because of the high cost of communication, now, after a significant decline in prices, it is becoming quite popular. Often, transport companies and their drivers equip cell phones and use them for transportation management. However, when using the cellular communication for a number of targets detected flaws. The disadvantage is still quite high fees for traffic. In the experience of some trucking companies, charge for the phone one driver is more than 150 euro a month. The other drawback is the lack of objective monitoring of the actual location of the machine. The dispatcher can judge it only from the words of the driver and his special request only. In addition, if a lot of cars in the enterprise, such queries and manual registration locations require a lot of time, attention and money. The disadvantages include the lack of documentation and negotiation with a driver (often resulting in misunderstandings between the dispatcher and driver) and documentation of the actual routes of vehicles. (Schmidt, Thoroe, Schumann, 2013)

6 CONCLUSION

A new approach to transport as part of a larger system. The logistics chain, led to the need to consider it in different ways. From the perspective of a systematic approach transport is a complex adaptive economic system consisting of interconnected in a single process of transport logistics services to regional human and material flows. Technological processes in the logistics chain for delivery of goods to the consumer, have their own characteristics, depending on the characteristics of the transport of cargo, quantity of goods, means of transport and its carrying capacity, the nature of production facilities.

Based on the foregoing, it should be noted that the main function of transport logistics - is the management of material flows from the manufacturer to the recipient on schedule. The main element of the logistics is transport. The subject of transport logistics is a set of tasks associated with the organization moving cargo for general use. Transport is an important link in the logistics system; he must possess a number of desirable properties and meet certain requirements in order to create innovative systems for the collection and distribution of goods. He must be able to carry small batches at short intervals in accordance with changing user inventory.

Within the boundaries of international logistics systems, different modes of transport are used based on optimizing the contact graphs, when in the presence of long-term sustainable transport all those involved in these kinds of transport are managed from a single center. The criteria for the choice of vehicles take the safety of goods, the best use of their capacity and capacity and reduce the cost of transportation. Logistics meet the objectives of such progressive methods of transportation, as batch, container, combined.

Prospects for the development of transport logistics consist in replacing paper documents with electronic conveyances. Automation of information flows, accompany-

ing cargo flows is one of the most important technical components of logistics. Moving the material flows in the supply chain is impossible without concentration in certain areas of necessary supplies, storage for dedicated storage. Movement through the warehouse due to the cost of labor and materials, which increases the cost of goods. In this regard, the problems associated with the operation of warehouses, have a significant impact on the rationalization of movement of material flows in the supply chain, the use of vehicles and distribution costs.

Modern large warehouse - is a complex technical structure, which consists of many interrelated elements, has a definite structure and performs a number of functions to transform the material flow as well as the generation, processing and distribution of goods among consumers. In this case, because of the variety of parameters, technological solutions, equipment design and characteristics of different nomenclature, handled cargo warehouses are complex systems. At the same time the warehouse itself is only part of the system of higher level - the logistics chain, which forms the basic and technical requirements for the storage system sets goals and criteria for its optimal functioning, dictates the terms of processing load. Therefore, the warehouse should not be considered in isolation but as an integral component of the supply chain. Only such an approach will ensure the successful implementation of the basic functions of a warehouse and a high level of profitability. It should be borne in mind that, in each case, for a particular store, warehouse system parameters are significantly different from each other, as well as its elements and the structure, based on the relationship between these elements. When you create a storage, system should be guided by the following principles: a customized solution taking into account all influencing factors can make it profitable. A prerequisite for this is a clear definition of functional tasks and a thorough analysis of the processing load, both inside and outside the warehouse. Any costs should be economically justified. The introduction of any technological and technical decisions concerning investment must come from a rational expediency, not of the fashion trends and technical possibilities offered by the market.

The main purpose of the warehouse - the concentration of stocks, storage and ensure the smooth and rhythmic execution of customer orders. The main functions of the warehouse are as follows: Convert product range in the consumer in accordance with the demand - the creation of the necessary range to fulfill customer orders. Of particular importance in this function acquires distribution logistics, where the trading range includes a huge list of products from different manufacturers, which differ functionally, in constructive, size, color, and so on. The required range of stock contributes to the effective implementation of customer orders and the implementation of more frequent deliveries and insofar as this is required by the client.

Warehousing and storage allows you to align the time difference between output and its consumption and provides an opportunity to carry out continuous production and supply on the basis of established inventory. Storage of goods in the distribution system is also necessary due to the seasonal consumption of certain goods. Many consumers bought from the stores of the party "less than wagon" or "less than the trailer", which significantly increases the costs associated with the delivery of such goods. In order to reduce transport costs warehouse can realize the function of association (unitization) small shipments for multiple clients to fully loaded vehicle.

The obvious aspect of provision of services is to provide customers with various services provided by the company high level of service consumers. Among them:

- Preparation of goods for sale (packaging products, filling containers, unpacking, and so on);
- Check the operation of instruments and equipment installation;
- Giving the product presentation, pre-treatment (e.g., wood);
- Freight forwarding services, and so on.

Information systems provide training, input, storage, processing, control and data transfer. They represent the corresponding information networks, starting with customer requirements. Logistics information systems are divided into three groups: planning, discretionary, executive. Routine information systems are created at the

administrative level management and serve for long-term strategic decisions. Discretionary information systems are created at the level of warehouse management or shop and serve to ensure smooth operation of logistics systems. Executive information systems are created at the level of administrative and operational management.

In the construction of logistics information systems based on computer must comply with certain principles: the principle of the use of hardware and software modules, the principle of the possibility of gradually developing a system to clearly establish the principles of expansion joints, the principle of flexibility in terms of the specific requirements of a particular application, the principle of user acceptance of dialogue "man-machine". Extensive penetration of logistics to the economy substantially obliged computerization of materials management. The ability of microprocessor technology to solve complex questions of information processing, allows the processing and sharing large amounts of data between the different actors of the logistics process.

Electronic data transmission is an automated information systems or the connection of different organizations, or geographically distant from each other divisions of the company. Communication between the communications systems provide, by means of communications technology. This activity - remote data transmission. Information infrastructure created both within individual production units, throughout the company as a whole based on modern, fast-acting computers, related software, transforms the information from the auxiliary factor in independent productive force capable of much in a short time, improve productivity, and minimize production costs.

The use of information logistics systems has allowed to establish effective communication between members of the management process, although it resulted in some problems, such as lack of information gathering in the enterprise logistics enterprises.

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